

CLAIMS

1. A method of correcting a predetermined adjustment value for an image forming apparatus forming an image of each of separated colors in accordance with said adjustment value, comprising:

a first formation step of forming a first base image for a base color in accordance with a predetermined adjustment value, and forming a first correction image for a correction color to be a subject for correction in accordance with a value obtained by changing a predetermined adjustment value within a predetermined range;

a first adjustment value determination step of determining a first adjustment value from the changed adjustment values based on a density output from a sensor detecting the density of an image forming portion;

an intermediate formation step of forming an intermediate correction base image for the base color in accordance with the predetermined adjustment value, and forming an intermediate correction image for the correction color in accordance with a plurality of selective adjustment values that have periodical relation with said first adjustment value;

an intermediate adjustment value determination step of determining an intermediate adjustment value from said plurality of selective adjustment values based on the density output from

said sensor;

an intermediate adjustment value candidate extraction step of extracting a plurality of intermediate adjustment value candidates that have periodical relation with said determined intermediate adjustment value in an adjustable range of an adjustment value;

an execution step of again extracting a plurality of selective adjustment values to be subject to adjustment from the intermediate adjustment value candidates and executing said intermediate forming step if the number of extracted intermediate adjustment values is a predetermined number or more;

a final formation step of forming a final base image for the base color in accordance with the predetermined adjustment value, and forming a final correction image for the correction color in accordance with each of said extracted intermediate adjustment value candidates, if the number of extracted intermediate adjustment value candidates is less than the predetermined number;

a final adjustment value determination step of determining a final adjustment value from said intermediate adjustment value candidates based on the density output from said sensor; and

a correction step of correcting the predetermined adjustment value for the correction color to the determined final adjustment value.

2. A method of correcting a predetermined adjustment value for an image forming apparatus forming an image of each of separated colors in accordance with said adjustment value, comprising:

a first formation step of forming a first base image for a base color in accordance with a predetermined adjustment value, and forming a first correction image for a correction color to be a subject for correction in accordance with a value obtained by changing a predetermined adjustment value within a predetermined range;

a first adjustment value determination step of determining a first adjustment value from the changed adjustment values based on a density output from a sensor detecting the density of an image forming portion;

an adjustment value candidate extraction step of extracting a plurality of adjustment value candidates that have periodical relation with the first adjustment value determined within said predetermined range in an adjustable range of an adjustment value;

a selective adjustment value extraction step of extracting a plurality of selective adjustment values to be subject to adjustment from the extracted adjustment value candidates;

an intermediate formation step of forming an intermediate base image for the base color in accordance with the predetermined adjustment value, and forming an intermediate correction image for the correction color in accordance with said extracted selective

adjustment values;

an intermediate adjustment value determination step of determining an intermediate adjustment value from said plurality of selective adjustment values based on the density output from said sensor;

an intermediate adjustment value candidate extraction step of extracting a plurality of intermediate adjustment value candidates that have periodical relation with said determined intermediate adjustment value in an adjustable range of an adjustment value;

an execution step of again extracting a plurality of selective adjustment values to be subject to adjustment from the extracted intermediate adjustment value candidates by said selective adjustment value extraction step and repeatedly executing each process at said intermediate formation step, intermediate adjustment value determination step and intermediate adjustment value candidate extraction step until the number of extracted intermediate adjustment value candidates becomes less than a predetermined number, if the number of extracted intermediate adjustment value candidates is the predetermined number or more;

a final formation step of forming a final base image for the base color in accordance with the predetermined adjustment value, and forming a final correction image for the correction color in accordance with each of said extracted intermediate adjustment value candidates, if the number of intermediate adjustment value

candidates extracted by said intermediate adjustment value
candidate extraction step is less than the predetermined number;

a final adjustment value determination step of determining
a final adjustment value from said intermediate adjustment value
candidates based on the density output from said sensor; and

a correction step of correcting the predetermined
adjustment value for the correction color to the determined final
adjustment value.

3. An image forming apparatus forming an image of each of
separated colors in accordance with a predetermined adjustment
value, comprising:

a sensor detecting a density of an image forming portion;
and

a processor capable of performing the following operations
comprising:

a first formation step of forming a first base image for a
base color in accordance with a predetermined adjustment value,
and forming a first correction image for a correction color to be a
subject for correction in accordance with a value obtained by
changing a predetermined adjustment value within a
predetermined range;

a first adjustment value determination step of determining
a first adjustment value from the changed adjustment values based
on a density output from said sensor;

an adjustment value candidate extraction step of extracting a plurality of adjustment value candidates that have periodical relation with the first adjustment value determined within said predetermined range in an adjustable range of an adjustment value;

a selective adjustment value extraction step of extracting a plurality of selective adjustment values to be subject to adjustment from the extracted adjustment value candidates;

an intermediate formation step of forming an intermediate base image for the base color in accordance with the predetermined adjustment value, and forming an intermediate correction image for the correction color in accordance with said extracted selective adjustment values;

an intermediate adjustment value determination step of determining an intermediate adjustment value from said plurality of selective adjustment values based on the density output from said sensor;

an intermediate adjustment value candidate extraction step of extracting a plurality of intermediate adjustment value candidates that have periodical relation with said determined intermediate adjustment value in an adjustable range of an adjustment value;

an execution step of again extracting a plurality of selective adjustment values to be subject to adjustment from the extracted intermediate adjustment value candidates by said selective adjustment value extraction step and repeatedly executing each

process at said intermediate formation step, intermediate adjustment value determination step and intermediate adjustment value candidate extraction step until the number of extracted intermediate adjustment value candidates becomes less than a predetermined number, if the number of extracted intermediate adjustment value candidates is the predetermined number or more;

a final formation step of forming a final base image for the base color in accordance with the predetermined adjustment value, and forming a final correction image for the correction color in accordance with each of said extracted intermediate adjustment value candidates, if the number of intermediate adjustment value candidates extracted by said intermediate adjustment value candidate extraction step is less than the predetermined number;

a final adjustment value determination step of determining a final adjustment value from said intermediate adjustment value candidates based on the density output from said sensor; and

a correction step of correcting the predetermined adjustment value for the correction color to the determined final adjustment value.

4. The image forming apparatus according to Claim 3, wherein said first formation step forms the first base images with a first interval and forms said first correction images based on a value obtained by changing an adjustment value within the range of the first interval.

5. The image forming apparatus according to Claim 3, wherein said first formation step forms said first base images and first correction images having a same shape.

6. The image forming apparatus according to Claim 4, wherein said intermediate formation step forms the intermediate base images for the base color in accordance with the predetermined adjustment value based on said first interval, and forms the intermediate correction images for the correction color in accordance with said extracted selective adjustment values based on said first interval.

7. The image forming apparatus according to Claim 4, wherein said final formation step forms the final base images for the base color in accordance with the predetermined adjustment value based on said first interval, and forms the final correction images for the correction color in accordance with each of said extracted intermediate adjustment value candidates based on said first interval, if the number of intermediate adjustment value candidates extracted by said intermediate adjustment value candidate extraction step is less than the predetermined number.

8. The image forming apparatus according to Claim 6, wherein each of said first base images, first correction images,

intermediate base images, intermediate correction images, final base images, and final correction images has a rectangular shape, and each of the intermediate base images, intermediate correction images, final base images, and final correction images has a width corresponding to an integer multiple of said first interval.

9. The image forming apparatus according to Claim 8, wherein said intermediate adjustment value candidates extraction step extracts a plurality of intermediate adjustment value candidates obtained by adding or subtracting an integer multiple of the sum of the widths of the intermediate base image and the intermediate correction image formed at said intermediate formation step to/from the intermediate adjustment value determined at said intermediate adjustment value determination step in an adjustable range of an adjustment value.

10. The image forming apparatus according to Claim 3, wherein the processor is further capable of performing the step of determining whether or not image formation by said intermediate formation step is to be executed,

wherein said correction step corrects the predetermined adjustment value for the correction color to said determined first adjustment value if it is determined that no image formation by said intermediate formation step is to be executed.

11. An image forming apparatus forming an image of each of separated colors in accordance with a predetermined adjustment value, comprising:

a sensor detecting a density of an image forming portion;

a first formation means for forming a first base image for a base color in accordance with a predetermined adjustment value, and forming a first correction image for a correction color to be a subject for correction in accordance with a value obtained by changing a predetermined adjustment value within a predetermined range;

a first adjustment value determination means for determining a first adjustment value from the changed adjustment values based on a density output from said sensor;

an adjustment value candidate extraction means for extracting a plurality of adjustment value candidates that have periodical relation with the first adjustment value determined within said predetermined range in an adjustable range of an adjustment value;

a selective adjustment value extraction means for extracting a plurality of selective adjustment values to be subject to adjustment from the extracted adjustment value candidates;

an intermediate formation means for forming an intermediate base image for the base color in accordance with the predetermined adjustment value, and forming an intermediate correction image for the correction color in accordance with said

extracted selective adjustment values;

an intermediate adjustment value determination means for determining an intermediate adjustment value from said plurality of selective adjustment values based on the density output from said sensor;

an intermediate adjustment value candidate extraction means for extracting a plurality of intermediate adjustment value candidates that have periodical relation with said determined intermediate adjustment value in an adjustable range of an adjustment value;

an execution means for again extracting a plurality of selective adjustment values to be subject to adjustment from the extracted intermediate adjustment value candidates by said selective adjustment value extraction means and repeatedly executing each process at said intermediate formation means, intermediate adjustment value determination means and intermediate adjustment value candidate extraction means until the number of extracted intermediate adjustment value candidates becomes less than a predetermined number, if the number of extracted intermediate adjustment value candidates is the predetermined number or more;

a final formation means for forming a final base image for the base color in accordance with the predetermined adjustment value, and forming a final correction image for the correction color in accordance with each of said extracted intermediate adjustment

value candidates, if the number of intermediate adjustment value candidates extracted by said intermediate adjustment value candidate extraction means is less than the predetermined number;

a final adjustment value determination means for determining a final adjustment value from said intermediate adjustment value candidates based on the density output from said sensor; and

a correction means for correcting the predetermined adjustment value for the correction color to the determined final adjustment value.

12. The image forming apparatus according to Claim 11, wherein said first formation means forms the first base images with a first interval and forms said first correction images based on a value obtained by changing an adjustment value within the range of the first interval.

13. The image forming apparatus according to Claim 11, wherein said first formation means forms said first base images and first correction images having a same shape.

14. The image forming apparatus according to Claim 12, wherein said intermediate formation means forms the intermediate base images for the base color in accordance with the predetermined adjustment value based on said first interval, and forms the

intermediate correction images for the correction color in accordance with said extracted selective adjustment values based on said first interval.

15. The image forming apparatus according to Claim 12, wherein said final formation means forms the final base images for the base color in accordance with the predetermined adjustment value based on said first interval, and forms the final correction images for the correction color in accordance with each of said extracted intermediate adjustment value candidates based on said first interval, if the number of intermediate adjustment value candidates extracted by said intermediate adjustment value candidate extraction step is less than the predetermined number.

16. The image forming apparatus according to Claim 14, wherein each of said first base images, first correction images, intermediate base images, intermediate correction images, final base images, and final correction images has a rectangular shape, and each of the intermediate base images, intermediate correction images, final base images, and final correction images has a width corresponding to an integer multiple of said first interval.

17. The image forming apparatus according to Claim 16, wherein said intermediate adjustment value candidates extraction means extracts a plurality of intermediate adjustment value

candidates obtained by adding or subtracting an integer multiple of the sum of the widths of the intermediate base image and the intermediate correction image formed at said intermediate formation means to/from the intermediate adjustment value determined at said intermediate adjustment value determination means in an adjustable range of an adjustment value.

18. The image forming apparatus according to Claim 11, further comprising

a means for determining whether or not image formation by said intermediate formation means is to be executed;

wherein said correction means corrects the predetermined adjustment value for the correction color to said determined first adjustment value if it is determined that no image formation by said intermediate formation means is to be executed.

19. A recording medium recording a computer program for correcting a predetermined adjustment value for an image forming apparatus forming an image of each of separated colors in accordance with said adjustment value, said computer program comprising:

a first formation step of making a computer form a first base image for a base color in accordance with a predetermined adjustment value, and form a first correction image for a correction color to be a subject for correction in accordance with a value

obtained by changing a predetermined adjustment value within a predetermined range;

a first adjustment value determination step of making a computer determine a first adjustment value from the changed adjustment values based on a density output from a sensor that outputs a density of an image forming portion;

an adjustment value candidate extraction step of making a computer extract a plurality of adjustment value candidates that have periodical relation with the first adjustment value determined within said predetermined range in an adjustable range of an adjustment value;

a selective adjustment value extraction step of making a computer extract a plurality of selective adjustment values to be subject to adjustment from the extracted adjustment value candidates;

an intermediate formation step of making a computer form an intermediate base image for the base color in accordance with the predetermined adjustment value, and form an intermediate correction image for the correction color in accordance with said extracted selective adjustment values;

an intermediate adjustment value determination step of making a computer determine an intermediate adjustment value from said plurality of selective adjustment values based on the density output from said sensor;

an intermediate adjustment value candidate extraction

step of making a computer extract a plurality of intermediate adjustment value candidates that have periodical relation with said determined intermediate adjustment value in an adjustable range of an adjustment value;

an execution step of making a computer again extract a plurality of selective adjustment values to be subject to adjustment from the extracted intermediate adjustment value candidates by said selective adjustment value extraction step and repeatedly execute each process at said intermediate formation step, intermediate adjustment value determination step and intermediate adjustment value candidate extraction step until the number of extracted intermediate adjustment value candidates becomes less than a predetermined number, if the number of extracted intermediate adjustment value candidates is the predetermined number or more;

a final formation step of making a computer form a final base image for the base color in accordance with the predetermined adjustment value, and form a final correction image for the correction color in accordance with each of said extracted intermediate adjustment value candidates, if the number of intermediate adjustment value candidates extracted by said intermediate adjustment value candidate extraction step is less than the predetermined number;

a final adjustment value determination step of making a computer determine a final adjustment value from said

intermediate adjustment value candidates based on the density output from said sensor; and

a correction step of making a computer correct the predetermined adjustment value for the correction color to the determined final adjustment value.